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APPENDIX B

SUPPORT DOCUMENTATION FOR SITE 07

TABLE D-1 LOCATION-SPECIFIC ARARs FOR SITE 07

Media	Requirement	Status	Synopsis	Action to be Taken to Meet ARAR	Most Recent Effective Date*	Modifications/ Impact to Remedy
Wetlands/ Water Resources (Federal)	Executive Order 11990; Wetlands Protection (40 CFR Part 6, Appendix A)	Applicable	Requires action to avoid whenever possible the long- and short-term impacts associated with the destruction of wetlands whenever there is a practicable alternative which promotes the preservation and restoration of the natural and beneficial values of wetlands.	The potential impacts to wetlands from remedial actions at Site 07 will be avoided, to the extent possible, and minimized in accordance with these requirements.	25-Jun-85 (original)	None
	Executive Order 11988; Statement on Proceedings of Floodplain Management (40 CFR 6, Appendix A)	Applicable	Requires action to avoid whenever possible the long- and short-term impacts associated with the occupancy and modifications of floodplains whenever there is a practicable alternative which promotes the preservation and restoration of the natural and beneficial values of floodplains.	The potential impacts to floodplains from remedial actions at Site 07 will be avoided, to the extent possible, and minimized in accordance with these requirements.	24-May-77 (original)	None
	Fish and Wildlife Coordination Act of 1958 (16 U.S.C. 661) Protection of Wildlife Habitats	Applicable	Requires consultation with federal and state conservation agencies during planning and decision-making processes which may impact water bodies, including wetlands.	If the implementation of remedial actions at Site 07 results in an impact to fish and/or wildlife, consultation with the U.S. Fish and Wildlife Service, RIDEM, and other federal and state agencies involved in fish and wildlife matters will be included.	12-Aug-58 (original) 50 CFR 402	None No applicable changes found.

* Compared to that at time ROD signed and remedy implemented.

Media	Requirement	Status	Synopsis	Action to be Taken to Meet ARAR	Most Recent Effective Date*	Modifications/ Impact to Remedy
	Clean Water Act, Section 404, 33 USC 1344; 40 CFR part 230	Applicable	Prohibits the discharge of dredged or fill materials into a water of the U.S. if there is a practicable alternative.	Applicable if the remedy will result in impacts to wetlands. Requirement to minimize and mitigate impacts will be met.	9-May-02 (67 FR 31129) 17-Jan-01 (66 FR 4549) 10-May-99 (64 FR 25120) 16-Aug-00 (65 FR 50108)	- Discharging of dredged material is likely to be regulable, and require complying with permitting requirements. - Clarification of definitions of "fill material", "dredged material," and "discharge." - Discharge of dredged and fill material into and degradation of wetlands strongly discouraged.
	Rivers and Harbors Act, 33 USC 403; 33 CFR Parts 320-323	Relevant and Appropriate	Prohibits unauthorized obstruction or alteration of navigable waters.	The environmental standards in the Act will apply to any actions in tidal waters.	24-Oct-02 (67 FR 65313, 33 CFR 334)	- No dredging or removal activity is anticipated, so no impact to remedy.

Media	Requirement	Status	Synopsis	Action to be Taken to Meet ARAR	Most Recent Effective Date*	Modifications/ Impact to Remedy
Wetlands (State)	Rhode Island Freshwater Wetlands Laws (RIGL 2-1-18 et seq.): RIDEM Rules Governing the Enforcement of the Freshwater Wetlands Act (CRIR 12-100-003)	Applicable	Defines and establishes provision for the protection of swamps, marshes, and other freshwater wetlands of the state. Actions are required to prevent the undesirable drainage, excavation, filling, alteration, encroachment, or any other form of disturbance to or destruction of a wetland.	Applicable if the remedy will result in impacts to freshwater wetlands. The potential impacts to wetlands from remedial actions at Site 07 will be avoided, to the extent possible, and minimized in accordance with these requirements.	1-April-98 with 8-Aug-01 amendments	- Wetlands in vicinity of coast now under jurisdiction of RI Coastal Resources Management Council - "Water quality improvement project" defined. - Includes freshwater wetlands in vicinity of the coast. - No impact expected to remedy.

Media	Requirement	Status	Synopsis	Action to be Taken to Meet ARAR	Most Recent Effective Date*	Modifications/ Impact to Remedy
Endangered Species (Federal)	Endangered Species Act of 1973 (16 U.S.C. 1531): Protection of Endangered Species	Applicable	Remedial actions may not jeopardize the continued existence of federally-listed endangered or threatened species, or adversely modify or destroy their critical habitats.	The federally endangered loggerhead turtle (*Caretta caretta*) and federally threatened Kemp's ridley turtle (*Lepidochelys kempii*) occur in the waters of Narragansett Bay. This standard is applicable if these species are identified at or adjacent to Site 07. Appropriate agencies will be contacted and measures will be taken during remedial activities to ensure that the species and its habitat are not adversely affected.	7-Dec-99 (64 FR 68507) 50 CFR 17 50 CFR 10.13	- No other applicable change found. - No removal activity is anticipated so no impact expected to the remedy.
Endangered Species (State)	Rhode Island Endangered Species Act (RIGL 20-37-1 et seq.)	Applicable	Remedial actions may not jeopardize the continued existence of state-listed endangered or threatened species, or adversely modify or destroy their critical habitats.	Information provided by RIDEM indicates that the Least Tern has been identified in the Davisville/Quonset area. The federally endangered loggerhead turtle (*Caretta caretta*) and federally threatened Kemp's ridley turtle (*Lepidochelys kempii*) occur in the waters of Narragansett Bay. If any of these species are identified at Site 07, then appropriate measures will be taken during construction activities to ensure that the remedial action does not adversely affect the species or its habitat.	Original guidance	- No removal activity is anticipated so no impact expected to the remedy.

Media	Requirement	Status	Synopsis	Action to be Taken to Meet ARAR	Most Recent Effective Date*	Modifications/ Impact to Remedy
Coastal Zones (Federal)	Coastal Zone Management Act (16 USC 3501 et seq.)	Applicable	Must conduct activities in a manner consistent with the approved state management program.	The substantive requirements of this Act will be met.	8-Dec-00 (65 FR 77123), 15 CFR 930	No applicable changes found.
Coastal Zones (State)	Rhode Island Coastal Resources Management Law (RIGL 46-23) and Regulations (CRIR 04-000-010)	Applicable	Creates the Coastal Resources Management Council and sets standards and authorizes promulgation of regulations for management and protection of coastal resources. Requires demonstration that development or operation in coastal areas is consistent with the Coastal Resources Management Plan without significantly damaging the environment of the coastal region.	Because Site 07 is located in a coastal area, the Navy will coordinate with the CRMC, as appropriate, to ensure that any remedial actions which will affect the coastline of Calf Pasture Point are consistent with the Coastal Resources Management Plan to the maximum extent possible.	2-Jan-02	No applicable changes found.
Historic Places (Federal)	Preservation of Historical and Archeological Data Act of 1974 (16 USC 469 et seq., 36 CFR Part 800)	Applicable	Requires recovering and preserving significant historical or archeological data when such data are threatened by a federal action or federally licensed action which alters any terrain where such data are located.	Portions of Site 07 have been identified as potential archaeologically-significant areas. Located objects will be recovered and preserved in accordance with the substantive requirements.	18-May-99	No applicable changes found.
Historic Places (State)	Rhode Island Historic Preservation Act (RIGL 42-45 et. seq.)	Applicable	This act requires the recovering and preservation of archeological and historic data and artifacts when threatened by a publicly funded action.	Since there are potential archeological sensitive areas at the site, the Navy will need to coordinate with RIHPC.	9-Jan-02	No applicable changes found.

TABLE D-2 ACTION-SPECIFIC ARARs AND TBCs FOR SITE 07

Process	Requirement	Status	Synopsis	Action to be Taken to Meet ARAR	Most Recent Effective Date*	Modifications/ Impact to Remedy
Sediment Monitoring (Federal)	Clean Water Act (33 USC 1251-1376; Federal Ambient Water Quality Criteria, 40 CFR 122.44	Relevant and Appropriate	Guidelines established for the protection of human health and/or aquatic organisms.	Shoreline/offshore sediment is within the discharge area for Site 07 ground water. Therefore, if determined to be necessary during the long-term ground-water monitoring program, AWQC, with modification, will be used to develop performance standards for sediment.	4-Aug-99 (64 CFR 149)	- Criteria for arsenic revised. - No other applicable changes found. - Arsenic revision will be incorporated in the LTMP.
Sediment Monitoring (State)	Water Pollution Control (RIGL 46-12 et seq.) and Water Quality Standards and Ambient Water Quality Guidelines	Relevant and Appropriate	Establishes water use classifications and water quality criteria for all waters of the state. Establishes acute and chronic ambient water quality criteria for the protection of aquatic life.	Shoreline/offshore sediment is within the discharge area for Site 07 ground water. Therefore, if determined to be necessary during the long-term ground-water monitoring program, Rhode Island ambient water quality guidelines will be considered for the development of performance standards for sediment.	23-Jun-00 (EVM 112-88.97-1) 8-Nov-00 (64 FR 61181)	- Water quality criteria amended. - No applicable changes found.

* Compared to that at time ROD signed and remedy implemented.

Process	Requirement	Status	Synopsis	Action to be Taken to Meet ARAR	Most Recent Effective Date*	Modifications/ Impact to Remedy
Ground-Water Monitoring (Federal)	Resource Conservation and Recovery Act (RCRA), 42 USC 6901 et seq.	Relevant and Appropriate	Outlines specifications for the performance of hazardous waste storage, treatment, and disposal facilities.	Substantive RCRA requirements are to be met pertaining to wastes disposed of prior to 1980 and to RCRA-listed or characteristic waste generated during proposed monitoring activities.	22-Oct-98 (63 FR 56733)	- No applicable changes found.
	RCRA - Generator and Handler Requirements, 40 CFR 260-261	Relevant and Appropriate	Establishes standards for listing and identification of hazardous waste.	For any materials generated during monitoring well installation, hazardous waste determinations will be performed and the wastes will be managed in accordance with these regulations, if necessary.	6-Aug-98 and 8-Nov-00 (63 FR 42109)	- No applicable changes found.
	RCRA - Subpart F, 40 CFR 264.90 (Applicability) and Subpart G, 40 CFR 264.110 through 264.120 (Closure and Post Closure)	Relevant and Appropriate	Post-closure requirements for units where hazardous waste was disposed prior to 1982.	Monitoring standards will be met through the implementation of the long-term ground-water monitoring program.	30-Nov-98 (63 FR 65938) 22-Oct-98 (63 FR 56733) 18-Aug-92 (57 FR 37265)	- No applicable changes found.

Process	Requirement	Status	Synopsis	Action to be Taken to Meet ARAR	Most Recent Effective Date*	Modifications/ Impact to Remedy
	Clean Water Act (33 USC 1251-1376); Federal Ambient Water Quality Criteria (AWQC), 40 CFR 122.44	Relevant and Appropriate	Standards established for the protection of human health and/or aquatic organisms.	AWQC, with modification, will be used during the development of performance standards for ground water based on the potential for discharge to surface water which may be used for fishing, boating, shellfish harvesting, and for wildlife habitat.	13-Jul-00 (65 FR 135)	- Total Maximum Daily Loads (TDML) have been revised. - Currently, ground water is compared to MCL and piezometer water is compared to AWQC. However, piezometer water samples are only analyzed for targeted VOC for which there are no AWQC. Therefore, there is no anticipated impact to the remedy.
	Safe Drinking Water Act, 40 CFR Part 141	Relevant and Appropriate	Establishes enforceable Maximum Contaminant Levels (MCL) as standards for public drinking water systems. Used as cleanup standards for aquifers that are potential drinking water supplies. Establishes Maximum Contaminant Level Goals (MCLG) which are non-enforceable health goals for public drinking water systems. Non-zero MCLG are relevant and appropriate.	MCL and non-zero MCLG will be used during the development of performance standards for ground-water.	22-Jan-01 (66 FR 7061)	- MCL for arsenic revised. - No other applicable changes found. - The arsenic revision will be incorporated in the LTMP.

Process	Requirement	Status	Synopsis	Action to be Taken to Meet ARAR	Most Recent Effective Date*	Modifications/ Impact to Remedy
Ground-Water Monitoring (State)	Rules and Regulations for Ground-Water Quality (12-100-006)	Applicable	Rules and Regulations intended to protect and restore the quality of the state's ground water. Includes ground-water monitoring program requirements and monitoring well construction abandonment. Also establishes ground-water quality standards and/or requirements.	Ground-water monitoring program will comply with these regulations. Water quality standards will be used during the development of performance standards for ground-water.	Aug-96	- None.
	Rhode Island Hazardous Waste Management Act of 1978 (RIGL 23-19.1 et seq.)	Relevant and Appropriate	Rules and regulations for hazardous waste generation, transportation, treatment, storage, and disposal. They incorporate, by reference, the federal RCRA requirements.	Wastes generated during monitoring activities will be managed in accordance with these regulations.	12-Dec-02 (DEM OWM-HW12-02, DEM OWM-SW2)	- No applicable changes found.

Process	Requirement	Status	Synopsis	Action to be Taken to Meet ARAR	Most Recent Effective Date*	Modifications/ Impact to Remedy
	Water Pollution Control (RIGL 46-12 et seq) and Water Quality Standards and Ambient Water Quality Guidelines	Relevant and Appropriate	Establishes water use classifications and water quality criteria for all waters of the state. Establishes acute and chronic ambient water quality criteria for the protection of aquatic life.	Discharges of ground water from Site 07 to surface water will comply with the substantive portions of these regulations to the extent that they are more stringent than federal standards.	12-Jun-01 (DEM 2000 303(d) List) 23-Jun-00 (EVM 112-88.97-1)	- Various classifications and criteria have been revised. - Allen's Harbor (and possible other local waterbodies) listed as Impaired Waterbody, Group 5 for total toxics. - Results of ground-water samples are compared to calculated trigger values (not AWQC) established for the LTMP. Therefore, no related impact to the site remedy is anticipated. No RIDEM GA goals have changed that are more stringent than the Federal MCL for the targeted VOC and metals in the site LTMP.

Process	Requirement	Status	Synopsis	Action to be Taken to Meet ARAR	Most Recent Effective Date*	Modifications/ Impact to Remedy
	Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (CRIR 12-180-001)	Relevant and Appropriate	These regulations set remediation standards for contaminated media at non-NPL sites in RI. These standards may also be determined to be relevant and appropriate for NPL sites if they are more stringent than federal standards.	For GA ground water at this site, the only standard within these regulations that is more stringent than applicable federal standards is for nickel. The nickel standard within these regulations will be used during the development of performance standards for ground-water monitoring.	Aug-96 (DEM DSR-01-93)	- None.

TABLE H-3 SUMMARY OF SURFACE WATER EPCS FOR SITE 07 – CALF PASTURE POINT, NCBC DAVISVILLE

COC	Risk-Based Trigger Value (mg/L)
Inorganics	
Aluminum	4.46E+01
Antimony	1.68E-01
Arsenic	2.04E-02
Beryllium	8.42E-01
Chromium	4.46E+01
Iron	2.44E+01
Manganese	9.66E+00
Nickel	6.30E+00
Volatiles	
1,1,2-Trichloroethane	6.02E-02
1,1-Dichloroethene	4.29E-03
1,2-Dichloroethane	8.43E-02
1,1,2,2-Tetrachloroethane	1.39E-02
Benzene	7.74E-02
Chloroform	6.46E-01
Total 1,2-Dichloroethene	9.86E-01
Tetrachloroethene	1.02E-02
Trichloroethene	1.84E-01
Vinyl Chloride	3.78E-03

TABLE H-4.1 VALUES USED FOR ADULT RECREATIONAL USER DAILY SURFACE WATER INTAKE EQUATIONS SITE 07 – CALF PASTURE POINT, NCBC DAVISVILLE

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Davisville Site 07
Receptor Population: Recreational User
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/Reference
Ingestion	CR	Ingestion Rate = CR	L/hr	0.05	U.S. EPA 1989
	ET	Exposure Time = ET	hr/day	1	BPJ
	EF	Exposure Frequency = EF	day/yr	39	BPJ
	ED	Exposure Duration = ED	yr	30	U.S. EPA 1991
	BW	Body Weight = BW	kg	70	U.S. EPA 1991
	AT-NC	Averaging time-Noncancer	days	10,950	U.S. EPA 1991
	AT-C	Averaging Time - Cancer	days	25,550	U.S. EPA 1989
Dermal	SA	Surface Area for Contact = SA	cm2	18,000	U.S. EPA 2000
	PC	Permeability Coefficient	cm/hr	chemical-specific	U.S. EPA 1992
	ET	Exposure Time = ET	hr/day	1	BPJ
	EF	Exposure Frequency = EF	day/yr	39	BPJ
	ED	Exposure Duration = ED	yr	30	BPJ
	BW	Body Weight = BW	kg	70	U.S. EPA 1991
	AT-NC	Averaging time - Noncancer = AT-NC	days	10,950	U.S. EPA 1991
	AT-C	Averaging Time - Cancer = AT-C	days	25,550	U.S. EPA 1989
	CF	Conversion Factor = CF	L/cm3	1.00E-03	

NOTE: BPJ = Best Professional Judgement

TABLE H-4.2 VALUES USED FOR ADULT RECREATIONAL USER DAILY SURFACE WATER INTAKE EQUATIONS SITE 07 – CALF PASTURE POINT, NCBC DAVISVILLE

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Davisville Site 07
Receptor Population: Recreational User
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/Reference
Ingestion	CR	Ingestion Rate = CR	L/hr	0.05	U.S. EPA 1989
	ET	Exposure Time = ET	hr/day	1	U.S. EPA 1997
	EF	Exposure Frequency = EF	day/yr	39	BPJ
	ED	Exposure Duration = ED	yr	4	U.S. EPA 1991
	BW	Body Weight = BW	kg	15	U.S. EPA 1991
	AT-NC	Averaging time-Noncancer	days	1,460	U.S. EPA 1991
	AT-C	Averaging Time - Cancer	days	25,550	U.S. EPA 1989
Dermal	SA	Surface Area for Contact = SA	cm2	6,600	U.S. EPA 2000
	PC	Permeability Coefficient	cm/hr	chemical-specific	U.S. EPA 1992
	ET	Exposure Time = ET	hr/day	1	U.S. EPA 1997
	EF	Exposure Frequency = EF	day/yr	39	BPJ
	ED	Exposure Duration = ED	yr	4	U.S. EPA 1991
	BW	Body Weight = BW	kg	15	U.S. EPA 1991
	AT-NC	Averaging time - Noncancer = AT-NC	days	1,460	U.S. EPA 1991
	AT-C	Averaging Time - Cancer = AT-C	days	25,550	U.S. EPA 1989
	CF	Conversion Factor = CF	L/cm3	1.00E-03	

NOTE: BPJ = Best Professional Judgement

TABLE H-5.1 NON-CANCER TOXICITY DATA – ORAL/DERMAL
SITE 07 – CALF PASTURE POINT, NCBC DAVISVILLE

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value (mg/kg-day)	Oral to Dermal Adjustment Factor (GI ABS) (1)	Adjusted Dermal RfD (2) (mg/kg bw-day)	Primary Target Organ	Combined Uncertainty/ Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (3) (mm/dd/yy)
Inorganics								
Aluminum	Subchronic	1.00E+00	1	1.00E+00	Central Nervous System	100/3	EPA-NCEA	5/30/1997
Antimony	Chronic	4.00E-04	0.15	6.00E-05	Blood glucose and cholesterol	1000/1	IRIS	1/17/2003
Arsenic	Chronic	3.00E-04	1	3.00E-04	Skin	3/1	IRIS	1/17/2003
Beryllium	Chronic	2.00E-03	0.007	1.40E-05	Small Intestine	300/1	IRIS	1/17/2003
Chromium	Chronic	1.50E+00	0.025	3.75E-02	None	300/3	IRIS	1/17/2003
Iron	NA	3.00E-01	1	3.00E-01	None	NA/NA	EPA-NCEA	
Manganese	Chronic	2.00E-02	0.04	8.00E-04	Central Nervous System	1/1	IRIS	1/17/2003
Nickel	Chronic	2.00E-02	0.04	8.00E-04	None	3000/1	IRIS	1/17/2003
Volatiles								
1,1,2-Trichloroethane	Chronic	4.00E-03	1	4.00E-03	Blood	1000/1	IRIS	1/17/2003
1,1-Dichloroethene	Chronic	5.00E-02	1	5.00E-02	Liver	100/1	IRIS	1/17/2003
1,2-Dichloroethane	Chronic	3.00E-02	1	3.00E-02	Central Nervous System	1000/1	EPA-NCEA	4/5/1993
1,1,2,2-Tetrachloroethane	Chronic	6.00E-02	1	6.00E-02	None	NA/NA	EPA-NCEA	
Benzene	Chronic	3.00E-03	1	3.00E-03	Central Nervous System	1000/1	EPA-NCEA	9/1/1998
Chloroform	Chronic	1.00E-02	1	1.00E-02	Liver	100/1	IRIS	1/17/2003
Total 1,2-Dichloroethene	Chronic	9.00E-03	1	9.00E-03	Liver	3000/1	HEAST	5/1/1995
Tetrachloroethene	Chronic	1.00E-02	1	1.00E-02	Liver	1000/1	IRIS	1/17/2003
Trichloroethene	Chronic	3.00E-04	1	3.00E-04	Central Nervous System, Liver, Kidney	NA/NA	EPA-NCEA	5/23/2001
Vinyl Chloride	Chronic	3.00E-03	1	3.00E-03	Liver	30/1	IRIS	1/17/2003

NOTES:
NA = Not applicable.
(1) = Taken from USEPA 2000 Guidance. USEPA, 2000. Risk Assessment Guidance for Superfund, volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Interim Guidance.
(2) = Dermal toxicological values adjusted from oral values using USEPA 2000 recommended chemical-specific gastrointestinal absorption factors(GI ABS). RfDs are multiplied by the GI ABS.
(3) = IRIS - Integrated Risk Information System. For IRIS values, the date IRIS was searched is provided.
HEAST - Health Effects Assessment Summary Tables. For HEAST values, the date of HEAST is provided.
EPA-NCEA - National Center for Environmental Assessment. For EPA-NCEA values, the date of the article provided by EPA-NCEA is provided.

TABLE H-5.2 CHEMICAL-SPECIFIC PARAMETERS
SITE 07 – CALF PASTURE POINT, NCBC DAVISVILLE

Chemical of Potential Concern	Permeability Constant (cm/hr)	Reference
Inorganics		
Aluminum	1.00E-03	On-line Database(1)
Antimony	1.00E-03	On-line Database(1)
Arsenic	1.00E-03	On-line Database(1)
Beryllium	NA(2)	U.S. EPA, 2000
Chromium	1.00E-03	On-line Database(1)
Iron	1.00E-03	On-line Database(1)
Manganese	1.00E-03	On-line Database(1)
Nickel	1.00E-03	On-line Database(1)
Volatiles		
1,1,2-Trichloroethane	6.43E-03	On-line Database(1)
1,1-Dichloroethene	1.59E-02	On-line Database(1)
1,2-Dichloroethane	5.30E-03	On-line Database(1)
1,1,2,2-Tetrachloroethane	8.97E-03	On-line Database(1)
Benzene	2.10E-02	On-line Database(1)
Chloroform	8.90E-03	On-line Database(1)
Total 1,2-Dichloroethene	1.10E-03	On-line Database(1)
Tetrachloroethene	4.81E-02	On-line Database(1)
Trichloroethene	1.60E-02	On-line Database(1)
Vinyl chloride	1.13E-02	On-line Database(1)

NOTES:
(1) = Toxicity and Chemical-Specific Factors Database. Http://risk.lsd.ornl.gov/cgi-bin/tox. January 2003.
(2) = Default Kp value for beryllium is a predicted value, and, therefore, inherently uncertain. Kp value is low, and the uncertainty is great.
U.S. EPA, 2000 = U.S. Environmental Protection Agency, 2000. Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Interim Guidance.

TABLE H-6.1 CANCER TOXICITY DATA – ORAL/DERMAL
SITE 07 – CALF PASTURE POINT, NCBC DAVISVILLE

Chemical of Potential Concern	Oral Cancer Slope Factor	Oral to Dermal Adjustment Factor (GI ABS)[1]	Adjusted Cancer Slope Factor [2]	Units	Weight of Evidence/Cancer Guideline Description	Source	Date [3] (mm/dd/yy)
Inorganics							
Aluminum	NA	1	NA	per (mg/kg-day)	D	EPA-NCEA	5/30/1997
Antimony	NA	0.15	NA	per (mg/kg-day)	D	IRIS	1/17/2003
Arsenic	1.50E+00	1	1.50E+00	per (mg/kg-day)	A	IRIS	1/17/2003
Beryllium	NA	0.007	NA	per (mg/kg-day)	D	IRIS	1/17/2003
Chromium	NA	0.025	NA	per (mg/kg-day)	D	IRIS	1/17/2003
Iron	NA	1	NA	per (mg/kg-day)	NA	EPA-NCEA	
Manganese	NA	0.04	NA	per (mg/kg-day)	D	IRIS	1/17/2003
Nickel	NA	0.04	NA	per (mg/kg-day)	NA	IRIS	1/17/2003
Volatiles							
1,1,2-Trichloroethane	5.70E-02	1	5.70E-02	per (mg/kg-day)	C	IRIS	1/17/2003
1,1-Dichloroethene	NA	1	NA	per (mg/kg-day)	C	IRIS	1/17/2003
1,2-Dichloroethane	9.10E-02	1	9.10E-02	per (mg/kg-day)	B2	IRIS	1/17/2003
1,1,2,2-Tetrachloroethane	2.00E-01	1	2.00E-01	per (mg/kg-day)	C	IRIS	1/17/2003
Benzene	5.50E-02	1	5.50E-02	per (mg/kg-day)	A	IRIS	1/17/2003
Chloroform	NA	1	NA	per (mg/kg-day)	B2	IRIS	1/17/2003
Total 1,2-Dichloroethene	NA	1	NA	per (mg/kg-day)	D	IRIS	1/17/2003
Tetrachloroethene	5.20E-02	1	5.20E-02	per (mg/kg-day)	B2	EPA-NCEA	
Trichloroethene	4.00E-01	1	4.00E-01	per (mg/kg-day)	NA	EPA-NCEA	5/23/2001
Vinyl chloride	1.40E+00	1	1.40E+00	per (mg/kg-day)	A	IRIS	1/17/2003
Vinyl chloride - Adult	7.20E-01	1	7.20E-01	per (mg/kg-day)	A	IRIS	1/17/2003

NOTES:
NA = Not applicable.
(1) = Taken from USEPA 2000 Guidance. USEPA, 2000. Risk Assessment Guidance for Superfund, volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Interim Guidance.
(2) = Dermal toxicological values adjusted from oral values using USEPA 2000 recommended chemical-specific gastrointestinal absorption factors(GI ABS). RfDs are multiplied by the GI ABS.
(3) = IRIS - Integrated Risk Information System. For IRIS values, the date IRIS was searched is provided. HEAST - Health Effects Assessment Summary Tables. For HEAST values, the date of HEAST is provided. EPA-NCEA - National Center for Environmental Assessment. For EPA-NCEA values, the date of the article provided by EPA-NCEA is provided.

Weight of Evidence:
A = Human carcinogen.
B1 = Probable human carcinogen – indicates that limited human data are available.
B2 = Probable human carcinogen – indicates sufficient evidence in animals and inadequate or no evidence in humans.
C = Possible human carcinogen.
D = Not classifiable as a human carcinogen.
E = Evidence of non-carcinogenicity.

TABLE H-9.1 SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs REASONABLE MAXIMUM EXPOSURE SITE 07 – CALF PASTURE POINT, NCBC DAVISVILLE

Location: Site 07
Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical*	Carcinogenic Risk	Chemical		Chemical*	Non-Carcinogenic Hazard Quotient			
				Ingestion	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Dermal	Exposure Routes Total
Surface Water	Surface Water	Site 07	**Inorganics**				**Inorganics**				
			Aluminum	--	--	NA	Aluminum	Central Nervous System	3.4E-03	1.2E-03	4.6E-03
			Antimony	--	--	NA	Antimony	Blood Glucose And Cholesterol	3.2E-02	7.7E-02	1.1E-01
			Arsenic	1.0E-06	3.6E-07	1.4E-06	Arsenic	Skin	5.2E-03	1.9E-03	7.1E-03
			Beryllium	--	--	NA	Beryllium	Small Intestine	3.2E-02	--	3.2E-02
			Chromium	--	--	NA	Chromium	None	2.3E-03	3.3E-02	3.5E-02
			Iron	--	--	NA	Iron	None	6.2E-03	2.2E-03	8.4E-03
			Manganese	--	--	NA	Manganese	Central Nervous System	3.7E-02	3.3E-01	3.7E-01
			Nickel	--	--	NA	Nickel	None	2.4E-02	2.2E-01	2.4E-01
			Volatiles				**Volatiles**				
			1,1,2-Trichloroethane	1.1E-07	2.6E-07	3.7E-07	1,1,2-Trichloroethane	Blood	1.1E-03	2.7E-03	3.8E-03
			1,1-Dichloroethene	--	--	NA	1,1-Dichloroethene	Liver	6.5E-06	3.7E-05	4.4E-05
			1,2-Dichloroethane	2.5E-07	4.8E-07	7.3E-07	1,2-Dichloroethane	Central Nervous System	2.1E-04	4.1E-04	6.2E-04
			1,1,2,2-Tetrachloroethane	9.1E-08	2.9E-07	3.8E-07	1,1,2,2-Tetrachloroethane	None	1.8E-05	5.7E-05	7.5E-05
			Benzene	1.4E-07	1.1E-06	1.2E-06	Benzene	Central Nervous System	2.0E-03	1.5E-02	1.7E-02
			Chloroform	--	--	NA	Chloroform	Liver	4.9E-03	1.6E-02	2.1E-02
			Total 1,2-Dichloroethene	--	--	NA	Total 1,2-Dichloroethene	Liver	8.4E-03	3.3E-03	1.2E-02
			Tetrachloroethene	1.7E-08	3.0E-07	3.2E-07	Tetrachloroethene	Liver	7.8E-05	1.3E-03	1.4E-03
			Trichloroethene	2.4E-06	1.4E-05	1.6E-05	Trichloroethene	Central Nervous System, Liver, Kidney	4.7E-02	2.7E-01	3.2E-01
			Vinyl Chloride	1.7E-07	7.0E-07	8.8E-07	Vinyl Chloride	Liver	9.6E-05	3.9E-04	4.9E-04
			(Total)	4.2E-06	1.7E-05	2.2E-05		(Total)	2.1E-01	9.7E-01	1.2E+00
					Total Risk Across Surface Water	**2.2E-05**				**Total Hazard Index Across Surface Water**	**1.2E+00**
					Total Risk Across All Media And All Exposure Routes	**2.2E-05**				**Total Hazard Index Across All Media And All Exposure Routes**	**1.2E+00**
										Total HI CNS	**3.9E-01**
										Total HI Blood	**1.1E-01**
										Total HI Intestines	**3.2E-02**
										Total HI Liver	**3.4E-02**

* Chemicals listed are those with trigger concentrations previously listed in Table H-3.

TABLE H-9.2 SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURE SITE 07 – CALF PASTURE POINT, NCBC DAVISVILLE

Location: Site 07
Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical*	Carcinogenic Risk	Chemical		Chemical*	Non-Carcinogenic Hazard Quotient			
				Ingestion	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Dermal	Exposure Routes Total
Surface Water	Surface Water	Site 07	**Inorganics**				**Inorganics**				
			Aluminum	--	--	NA	Aluminum	Central Nervous System	1.6E-02	2.1E-03	1.8E-02
			Antimony	--	--	NA	Antimony	Blood Glucose And Cholesterol	1.5E-01	1.3E-01	2.8E-01
			Arsenic	6.2E-07	8.2E-08	7.0E-07	Arsenic	Skin	2.4E-02	3.2E-03	2.7E-02
			Beryllium	--	--	NA	Beryllium	Small Intestine	1.5E-01	--	1.5E-01
			Chromium	--	--	NA	Chromium	None	1.1E-02	5.6E-02	6.7E-02
			Iron	--	--	NA	Iron	None	2.9E-02	3.8E-03	3.3E-02
			Manganese	--	--	NA	Manganese	Central Nervous System	1.7E-01	5.7E-01	7.4E-01
			Nickel	--	--	NA	Nickel	None	1.1E-01	3.7E-01	4.8E-01
			Volatiles				**Volatiles**				
			1,1,2-Trichloroethane	7.0E-08	5.9E-08	1.3E-07	1,1,2-Trichloroethane	Blood	5.4E-03	4.5E-03	9.9E-03
			1,1-Dichloroethene	--	--	NA	1,1-Dichloroethene	Liver	3.1E-05	6.4E-05	9.5E-05
			1,2-Dichloroethane	1.6E-07	1.1E-07	2.7E-07	1,2-Dichloroethane	Central Nervous System	1.0E-03	7.0E-04	1.7E-03
			1,1,2,2-Tetrachloroethane	5.7E-08	6.7E-08	1.2E-07	1,1,2,2-Tetrachloroethane	None	8.3E-05	9.8E-05	1.8E-04
			Benzene	8.7E-08	2.4E-07	3.3E-07	Benzene	Central Nervous System	9.2E-03	2.5E-02	3.5E-02
			Chloroform	--	--	NA	Chloroform	Liver	2.3E-02	2.7E-02	5.0E-02
			Total 1,2-Dichloroethene	--	--	NA	Total 1,2-Dichloroethene	Liver	3.9E-02	5.7E-03	4.5E-02
			Tetrachloroethene	1.1E-08	6.9E-08	7.9E-08	Tetrachloroethene	Liver	3.6E-04	2.3E-03	2.7E-03
			Trichloroethene	1.5E-06	3.2E-06	4.7E-06	Trichloroethene	Central Nervous System, Liver, Kidney	2.2E-01	4.6E-01	6.8E-01
			Vinyl Chloride	1.1E-07	1.6E-07	2.7E-07	Vinyl Chloride	Liver	4.5E-04	6.7E-04	1.1E-03
			(Total)	2.6E-06	4.0E-06	6.6E-06		(Total)	9.6E-01	1.7E+00	2.6E+00
					Total Risk Across Surface Water	**6.6E-06**				**Total Hazard Index Across Surface Water**	**2.6E+00**
					Total Risk Across All Media And All Exposure Routes	**6.6E-06**				**Total Hazard Index Across All Media And All Exposure Routes**	**2.6E+00**
										Total HI CNS	**7.9E-01**
										Total HI Blood	**2.9E-01**
										Total HI Intestines	**1.5E-01**
										Total HI Liver	**9.9E-02**

* Chemicals listed are those with trigger concentrations previously listed in Table H-3.